

AMENDMENTS TO THE CLAIMS

Claim 1 (currently amended) A jet in flow communications with a reservoir comprising:

5 a substrate having a manifold for receiving fluid from the reservoir;

an orifice layer disposed above the substrate so that a plurality of chambers are formed between the orifice layer and the substrate; and

10 a plurality of nozzles that are disposed on the orifice layer and correspond to the plurality of chambers for ejecting the fluid in the chambers so as to form a plurality of droplets, each of the nozzles comprising:

15 an orifice formed on the orifice layer; and
at least three distinct ~~bubble-generators~~ heaters electrically connected to a driving circuit and disposed at a first side of the orifice and a second side of the orifice, at least two
20 of the ~~bubble-generators~~ heaters disposed at one of either the first side or the second side, and at least one of the ~~bubble-generators~~ heaters disposed at the other of the first side and the second side, the driving circuit driving the ~~bubble-generator~~ heater(s)
25 disposed at the first side to heat fluid to generate a first bubble in a corresponding chamber and driving the ~~bubble-generator~~ heater(s) disposed at the second side to heat fluid
30 to generate a second bubble in the corresponding chamber;

wherein each heater disposed at either the first side

or th second side is connected in series to one
of the heater(s) disposed at the other side,
wherein the driving circuit is capable of
independently driving or simultaneously driving
5 each heater disposed on the same side of the
orifice along with the corresponding heaters
disposed on the other side of the orifice that
are serially connected to the driven heaters;
wherein the driving circuit drives the ~~bubble~~
10 ~~generators~~ heaters selectively so that each of
the nozzles is capable of ejecting droplets of
different sizes.

Claims 2-8 (cancelled).

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Claim 9 (currently amended) The jet of ~~claim 7~~ claim
1 wherein at least two heaters are disposed at the
first side, and each of the nozzles comprises a
leading wire for connecting one of the heater(s)
20 disposed at the second side with the heaters
disposed at the first side, and the driving circuit
applies a voltage on at least one of the heaters
disposed at the first side to generate the first
bubble and the second bubble simultaneously.

25

Claim 10 (currently amended) The jet of ~~claim 7~~ claim
1 wherein at least two heaters are disposed at the
second side, and each of the nozzles comprises a
leading wire for connecting one of the heater(s)
30 disposed at the first side with the heaters
disposed at the second side, and the driving
circuit applies a voltage on at least one of the

h aters disposed at th second side to generate the first bubble and the second bubble simultaneously.

Claims 11-15 (cancelled).

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Claim 16 (currently amended) A jet in flow communication with a reservoir comprising:

an orifice disposed above the reservoir;

10 a first bubble generator group disposed at a first side of the orifice for generating a first bubble in the reservoir; and

15 a second bubble generator group disposed at a second side of the orifice for generating a second bubble in the reservoir, the first bubble and the second bubble squeezing fluid between the first bubble and the second bubble out of the orifice to form a droplet;

20 wherein the first bubble generator group and the second bubble generator group together comprise at least three distinct bubble generators, the first bubble generator group or the second bubble generator group comprises at least two independently drivable bubble generators for generating the first bubble or the second bubble,
25 and the other of the first bubble generator group or the second bubble generator group comprises at least one distinct bubble generator.

30 Claim 17 (original) The jet of claim 16 wherein each of the bubble generators is a heater.

Claim 18 (original) The jet of claim 16 wherein an

interval between the orifice and one of the two bubble generators is different from an interval between the orifice and the other one of the two bubble generators.

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Claims 19-20 (cancelled).

10 Claim 21 (previously added) The jet of claim 16 wherein a resistance value of each of the bubble generator(s) in the first bubble generator group is different from a resistance value of each of the bubble generator(s) in the second bubble generator group.

15 Claim 22 (previously added) The jet of claim 16 wherein each of the bubble generators in the first bubble generator group and the second bubble generator group has a unique resistance value.

20 Claim 23 (previously added) The jet of claim 16 further comprising a manifold for receiving fluid from the reservoir, wherein the first bubble is used as a virtual valve to restrict fluid to avoid flowing to the manifold.

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30 Claim 24 (previously added) The jet of claim 16 further comprising a driving circuit electrically connected to the bubble generators and wherein each of the bubble generators is a heater, the driving circuit drives the heater(s) disposed at the first side to heat fluid so as to generate the first bubble, and the driving circuit drives the heater(s) disposed at the second side to heat

fluid so as to generate the second bubble.

Claim 25 (currently amended) The jet of claim 24
wherein ~~there is at least one~~ each heater disposed
5 at the first side and either the first side or the
second side is connected in series to one of the
heater(s) disposed at the ~~second~~ other side, wherein
~~resistance of the heater disposed at the first side~~
~~is greater than resistance of the heater disposed~~
10 at the second side the driving circuit is capable
of independently driving or simultaneously driving
each heater disposed on the same side of the orifice
along with the corresponding heaters disposed on the
other side of the orifice that are serially
15 connected to the driven heaters.

Claim 26 (currently amended) The jet of ~~claim 25~~
~~wherein each of the heater(s) disposed at the first~~
~~side connects in series to one of the heater(s)~~
20 ~~disposed at the second side~~ claim 24 wherein two
heaters are disposed on the first side and one heater
is disposed on the second side, each of the heaters
disposed on the first side is connected in series
to the heater disposed on the second side, the
25 driving circuit is capable of simultaneously
driving the two heaters disposed on the first side
along with the heater disposed on the second side
to generate the first and second bubbles, and the
driving circuit is capable of driving either one of
30 the heaters disposed on the first side along with
the heater disposed on the second side to generate
the first and second bubbles.

Claim 27 (previously added) The jet of claim 25 wherein
at least two heaters are disposed at the first side,
the jet further comprising a leading wire for
5 connecting one of the heater(s) disposed at the
second side with the heaters disposed at the first
side, and a driving circuit applies a voltage on at
least one of the heaters disposed at the first side
to generate the first bubble and the second bubble
10 simultaneously.

Claim 28 (previously added) The jet of claim 25 wherein
at least two heaters are disposed at the second side,
the jet further comprising a leading wire for
15 connecting one of the heater(s) disposed at the
first side with the heaters disposed at the second
side, and a driving circuit applies a voltage on
at least one of the heaters disposed at the second
side to generate the first bubble and the second
20 bubble simultaneously.

Claim 29 (previously added) The jet of claim 24 wherein
there is at least one heater disposed at the first
side connected in parallel to one of the heater(s)
25 disposed at the second side, wherein a resistance
of the heater disposed at the first side is less
than a resistance of the heater disposed at the
second side.

30 Claim 30 (previously added) The jet of claim 24 wherein
the orifice is formed in an orifice layer
comprising at least two structure layers arranged

in parallel, and there is at least one heater disposed on each of the structure layers.

5 Claim 31 (previously added) The jet of claim 30 wherein the droplet is ejected from the orifice along an ejection direction, and at least two of the heaters are disposed on the two structure layers linearly along the ejection direction.

10 Claim 32 (previously added) The jet of claim 16 wherein the droplet is ejected from the orifice along an ejection direction, and the bubble generators are disposed in parallel at the first side and the second side.

15 Claim 33 (previously added) The jet of claim 16 wherein the bubble generator(s) disposed at the first side are arranged along a first straight line, the bubble generator(s) disposed at the second side are arranged
20 along a second straight line, and the first straight line is parallel to the second straight line.

Claim 34 (new) A jet in flow communication with a reservoir comprising:

25 an orifice disposed above the reservoir;
a first bubble generator group disposed at a first side of the orifice for generating a first bubble in the reservoir; and
a second bubble generator group disposed at a second
30 side of the orifice for generating a second bubble in the reservoir, the first bubble and the second bubble squeezing fluid between the

first bubble and the second bubble out of the orifice to form a droplet;

wherein a number of bubble generators in the first bubble generator group is different from a number of bubble generators in the second bubble generator group.

10 Claim 35 (new) The jet of claim 34 wherein the first bubble generator group and the second bubble generator group together comprise at least three distinct bubble generators, the first bubble generator group or the second bubble generator group comprises at least two independently drivable bubble generators for generating the first bubble or the second bubble, and the other of the first bubble generator group or the second bubble generator group comprises at least one distinct bubble generator.

20 Claim 36 (new) The jet of claim 35 wherein the first bubble generator group comprises two bubble generators and the second bubble generator group comprises one bubble generator.

25 Claim 37 (new) The jet of claim 35 wherein the first bubble generator group comprises one bubble generator and the second bubble generator group comprises two bubble generators.

30 Claim 38 (new) The jet of claim 34 wherein a resistance value of each bubble generator in the first bubble generator group is different from a resistance

value of each bubble generator in the second bubble generator group.

5 Claim 39 (new) The jet of claim 34 wherein each bubble generator in the first bubble generator group and the second bubble generator group has a unique resistance value.

10 Claim 40 (new) The jet of claim 34 further comprising a driving circuit electrically connected to the bubble generators and wherein each bubble generator is a heater, the driving circuit drives the heater(s) disposed at the first side to heat fluid so as to generate the first bubble, and the
15 driving circuit drives the heater(s) disposed at the second side to heat fluid so as to generate the second bubble.

20 Claim 41 (new) The jet of claim 40 wherein each heater disposed at either the first side or the second side is connected in series to one of the heater(s) disposed at the other side, wherein the driving circuit is capable of independently driving or simultaneously driving each heater disposed on the
25 same side of the orifice along with the corresponding heaters disposed on the other side of the orifice that are serially connected to the driven heaters.

30 Claim 42 (new) The jet of claim 40 wherein two heaters are disposed on the first side and one heater is disposed on the second side, each of the heaters

disposed on the first side is connected in series
to the heater disposed on the second side, the
driving circuit is capable of simultaneously
driving the two heaters disposed on the first side
5 along with the heater disposed on the second side
to generate the first and second bubbles, and the
driving circuit is capable of driving either one of
the heaters disposed on the first side along with
the heater disposed on the second side to generate
10 the first and second bubbles.

Claim 43 (new) A jet in flow communications with a
reservoir comprising:

15 a substrate having a manifold for receiving fluid
from the reservoir;
an orifice layer disposed above the substrate so that
a plurality of chambers are formed between the
orifice layer and the substrate; and
a plurality of nozzles that are disposed on the
20 orifice layer and correspond to the plurality of
chambers for ejecting the fluid in the chambers
so as to form a plurality of droplets, each of
the nozzles comprising:
an orifice formed on the orifice layer; and
25 two heaters electrically connected to a driving
circuit and disposed at a first side of the
orifice and one heater electrically connected
to the driving circuit and disposed at a
second side of the orifice, the driving
30 circuit driving the two heaters disposed at
the first side to heat fluid to generate a
first bubble in a corresponding chamber and

driving the heater disposed at the second side
to heat fluid to generate a second bubble in
the corresponding chamber;

5 wherein each of the heaters disposed on the first
side is connected in series to the heater
disposed on the second side, the driving circuit
is capable of simultaneously driving the two
heaters disposed on the first side along with the
10 heater disposed on the second side to generate
the first and second bubbles, and the driving
circuit is capable of driving either one of the
heaters disposed on the first side along with the
heater disposed on the second side to generate
the first and second bubbles;

15 wherein the driving circuit drives the heaters
selectively so that each of the nozzles is
capable of ejecting droplets of different sizes.